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| | | | | 6.2.3.2.2 | Trace the changes of energy forms, including thermal, electrical, chemical, mechanical or others as energy is used in devices.<br>*For example:* A bicycle, light bulb or automobile. | | |
| | | | | 6.2.3.2.3 | Describe how heat energy is transferred in conduction, convection and radiation. | | |
| **7** | 1. The Nature of Science and Engineering | 1. The Practice of Science | 1. Science is a way of knowing about the natural world and is characterized by empirical criteria, logical argument and skeptical review. | 7.1.1.1.1 | Understand that prior expectations can create bias when conducting scientific investigations.<br>*For example:* Students often continue to think that air is not matter, even though they have contrary evidence from investigations. | First lab "Five Senses" | Lab packet and class discussion |
| | | | | 7.1.1.1.2 | Understand that when similar investigations give different results, the challenge is to judge whether the differences are significant, and if further studies are required.<br>*For example:* Use mean and range to analyze the reliability of experimental results. | Not Covered | |
| | | | 2. Scientific inquiry uses multiple interrelated processes to investigate | 7.1.1.2.1 | Generate and refine a variety of scientific questions and match them with appropriate methods of investigation, such as field studies, controlled experiments, reviews of existing work and development of models. | Partially covered | In class discussions |

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| | | | questions and propose explanations about the natural world. | 7.1.1.2.2 | Plan and conduct a controlled experiment to test a hypothesis about a relationship between two variables, ensuring that one variable is systematically manipulated, the other is measured and recorded, and any other variables are kept the same (controlled). *For example:* The effect of various factors on the production of carbon dioxide by plants. | Partially covered by;<br><br>Book A Redi and Pasteur's Experiments | Section test and class discussion |
| | | | | 7.1.1.2.3 | Generate a scientific conclusion from an investigation, clearly distinguishing between results (evidence) and conclusions (explanation). | Partially covered by;<br><br>Book A Redi and Pasteur's Experiments | Section test and class discussion |
| | | | | 7.1.1.2.4 | Evaluate explanations proposed by others by examining and comparing evidence, identifying faulty reasoning, and suggesting alternative explanations. | Spontaneous Generation in Book A | Test and class discussion |
| **7** | 1. The Nature of Science and Engineering | 3. Interactions Among Science, Technology, Engineering, Mathematics and Society | 4. Current and emerging technologies have enabled humans to develop and use models to understand and communicate how | 7.1.3.4.1 | Use maps, satellite images and other data sets to describe patterns and make predictions about natural systems in a life science context. *For example:* Use online data sets to compare wildlife populations or water quality in regions of Minnesota. | Not covered | |

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| | | | natural and designed systems work and interact. | 7.1.3.4.2 | Determine and use appropriate safety procedures, tools, measurements, graphs and mathematical analyses to describe and investigate natural and designed systems in a life science context. | Microscope Lab,<br>Metric Lab | Lab Report/packet |
| | 2. Physical Science | 1. Matter | 1. The idea that matter is made up of atoms and molecules provides the basis for understanding the properties of matter. | 7.2.1.1.1 | Recognize that all substances are composed of one or more of approximately one hundred elements and that the periodic table organizes the elements into groups with similar properties. | Book A Chemicals of Living Things | Section test and class discussion |
| | | | | 7.2.1.1.2 | Describe the differences between elements and compounds in terms of atoms and molecules. | Book C Chapter 1 sec 4<br>Chemical compounds | Section test and class discussion |
| | | | | 7.2.1.1.3 | Recognize that a chemical equation describes a reaction where pure substances change to produce one or more pure substances whose properties are different from the original substance(s). | Book A Photosynthesis | Section test and class discussion |
| | 4. Life Science | 1. Structure and Function in Living Systems | 1. Tissues, organs and organ systems are composed of cells and function to serve the needs of all cells for food, air and waste removal. | 7.4.1.1.1 | Recognize that all cells do not look alike and that specialized cells in multicellular organisms are organized into tissues and organs that perform specialized functions.<br>*For example*: Nerve cells and skin cells do not look the same because they are part of different organs and have different functions. | Books A, B and C | Section test and class discussion |

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| | | | | 7.4.1.1.2 | Describe how the organs in the respiratory, circulatory, digestive, nervous, skin and urinary systems interact to serve the needs of vertebrate organisms. | Chapter 1 sec 1 Book B | Section test and class discussion |
| **7** | 4. Life Science | 1. Structure and Function in Living Systems | 2. All living organisms are composed of one or more cells which carry on the many functions needed to sustain life. | 7.4.1.2.1 | Recognize that cells carry out life functions, and that these functions are carried out in a similar way in all organisms, including animals, plants, fungi, bacteria and protists. | Books A, B and C | Section test and class discussion |
| | | | | 7.4.1.2.2 | Recognize that cells repeatedly divide to make more cells for growth and repair. | Books A and C | Section test and class discussion |
| | | | | 7.4.1.2.3 | Use the presence of the cell wall and chloroplasts to distinguish between plant and animal cells.<br>*For example:* Compare microscopic views of plant cells and animal cells. | Books A and C | Section test and class discussion |
| | | 2. Interdepen-dence Among Living Systems | 1. Natural systems include a variety of organisms that interact with one another in several ways. | 7.4.2.1.1 | Identify a variety of populations and communities in an ecosystem and describe the relationships among the populations and communities in a stable ecosystem. | Book E | Section test and class discussion |
| | | | | 7.4.2.1.2 | Compare and contrast predator/prey, parasite/host and producer/consumer/decomposer relationships. | Books A, B, C and E | Section test and class discussion |

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| | | | | 7.4.2.1.3 | Explain how the number of populations an ecosystem can support depends on the biotic resources available as well as abiotic factors such as amount of light and water, temperature range and soil composition. | Book E | Section test and class discussion |
| | | | 2. The flow of energy and the recycling of matter are essential to a stable ecosystem. | 7.4.2.2.1 | Recognize that producers use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately, stored for later use, or used by other organisms. | Book A, E | Section test and class discussion |
| | | | | 7.4.2.2.2 | Describe the roles and relationships among producers, consumers and decomposers in changing energy from one form to another in a food web within an ecosystem. | Book E | Section test and class discussion |
| | | | | 7.4.2.2.3 | Explain that the total amount of matter in an ecosystem remains the same as it is transferred between organisms and their physical environment, even though its form and location change.<br>*For example:* Construct a food web to trace the flow of matter in an ecosystem. | Book E | Section test and class discussion |

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| 7 | 4. Life Science | 3. Evolution in Living Systems | 1. Reproduction is a characteristic of all organisms and is essential for the continuation of a species. Hereditary information is contained in genes which are inherited through asexual or sexual reproduction. | 7.4.3.1.1 | Recognize that cells contain genes and that each gene carries a single unit of information that either alone, or with other genes, determines the inherited traits of an organism. | Book C | Section test and class discussion |
| | | | | 7.4.3.1.2 | Recognize that in asexually reproducing organisms all the genes come from a single parent, and that in sexually reproducing organisms about half of the genes come from each parent. | Books A, B, C and E | Section test and class discussion |
| | | | | 7.4.3.1.3 | Distinguish between characteristics of organisms that are inherited and those acquired through environmental influences. | Book C | Section test and class discussion |
| | | | 2. Individual organisms with certain traits in particular environments are more likely than others to survive and have offspring. | 7.4.3.2.1 | Explain how the fossil record documents the appearance, diversification and extinction of many life forms. | Books A and B | Section test and class discussion |
| | | | | 7.4.3.2.2 | Use internal and external anatomical structures to compare and infer relationships between living organisms as well as those in the fossil record. | Books A and B | Section test and class discussion |
| | | | | 7.4.3.2.3 | Recognize that variation exists in every population and describe how a variation can help or hinder an organism's ability to survive. | Books A, B, C and E | Section test and class discussion |
| | | | | 7.4.3.2.4 | Recognize that extinction is a common event and it can occur when the environment changes and a population's ability to adapt is insufficient to allow its survival. | Books A and B | Section test and class discussion |

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| | | 4. Human Interactions with Living Systems | 1. Human activity can change living organisms and ecosystems. | 7.4.4.1.1 | Describe examples where selective breeding has resulted in new varieties of cultivated plants and particular traits in domesticated animals. | Books A, and E | Section test and class discussion |
| | | | | 7.4.4.1.2 | Describe ways that human activities can change the populations and communities in an ecosystem. | Book E | Section test and class discussion |
| **7** | 4. Life Science | 4. Human Interactions with Living Systems | 2. Human beings are constantly interacting with other organisms that cause disease. | 7.4.4.2.1 | Explain how viruses, bacteria, fungi and parasites may infect the human body and interfere with normal body functions. | Book A, | Chapter test, Med-Myst lab and class discussion |
| | | | | 7.4.4.2.2 | Recognize that a microorganism can cause specific diseases and that there are a variety of medicines available that can be used to combat a given microorganism. | Book A | Chapter test, Med-Myst lab and class discussion |
| | | | | 7.4.4.2.3 | Recognize that vaccines induce the body to build immunity to a disease without actually causing the disease itself. | Book A | Chapter test, Med-Myst lab and class discussion |
| | | | | 7.4.4.2.4 | Recognize that the human immune system protects against microscopic organisms and foreign substances that enter from outside the body and against some cancer cells that arise from within. | Book A | Chapter test, Med-Myst lab and class discussion |